

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A process for the processing of waste substances, in particular of residual waste, comprising

- a mechanical processing of the residual waste
- a biological processing of the residual waste, by supplying process water (10.2, 9.4, 14.2.11) for dissolving and/or discharging organic constituents, and
- processing the process water (4.3, 14.1.10, 14.1.11) charged with organic matter by separating off organic constituents from the process water (4.3, 14.1.10, 14.1.11), characterized in that

the process water processing step contains a physico-chemical processing (PCP, 21, 22, 23, 24) for denitrification of the process water (9.6)-freed from organic constituents, wherein the PCP includes a reverse osmosis (23) for separating out pollutants, salts, etc., upstream of which an ultrafiltration and/or mechanical fine sifting (13) is arranged.

2. (Currently Amended) The process in accordance with claim 1, wherein the PCP includes at least one stripper means (21, 22, 22') for separating out ammonia gas dissolved in the process water (16).

3. (Currently Amended) The process in accordance with claim 2, wherein the process water (20) is injected into a stripper column (22, 22') and there subjected to the injection of air in a counter-flow.

4. (Currently Amended) The process in accordance with claim 3, comprising a catalyst column (22.8) for converting the ammonia gases into nitrogen and water.

5. (Currently Amended) The process in accordance with claim 2, wherein the process water (20.1) is injected into a stripper column (21) and there subjected to the injection of saturated vapor in a counter-flow.

6. (Currently Amended) The process in accordance with claim 5, comprising a cooler (24) for converting the ammonia gases into nitrogen and water.

7. (Currently Amended) The process in accordance with claim 2, wherein stripper means with introduction of air (22) are arranged in series with second stripper means with introduction of air (22') or stripper means with injection of saturated vapor (21).

8. (Currently Amended) The process in accordance with claim 2, wherein lye (19) is added to the process water (18) upstream from the stripper means (21, 22, 22').
9. (Currently Amended) The process in accordance with claim 1, wherein the biological processing takes place in a percolation plant (4), a pulper plant (5), or in a fermentation plant (6).
10. (Currently Amended) The process in accordance with claim 9, wherein an ultrafiltration (13) of the process water (9.6) precedes the PCP plant (21, 22, 23-24).
11. (Currently Amended) The process in accordance with claim 1, wherein the processing of the process water (9.3) includes a precipitation of chlorides, phosphates, etc.
12. (Currently Amended) The process in accordance with claim 1, wherein the biological processing of the process water (9.3) takes place in a hybrid reactor (9) including a solid bed (9.2) which comprises sludge discharge means (9.8) and/or means (9.11) for destroying a surface scum.
13. (Currently Amended) The process in accordance with claim 12, comprising means (9.13) for the injection of air/oxygen (9.13.2) into the head of the hybrid reactor (9).
14. (Currently Amended) The process in accordance with claim 12, wherein the hybrid reactor (9) includes means for pressing in gas (9.15) so as to periodically subject a forming bed of sludge (9.2.1) and the solid bed (9.2) to shear forces.
15. (Currently Amended) The process in accordance with claim 12, wherein the forming biogas is desulfurized in a desulfurization chamber (9.12) of the hybrid reactor (9).
16. (Currently Amended) The process in accordance with a combination containing claim 10, wherein a part of the solids/water mixture (16.1) occurring in the ultrafiltration (13) is added to the precipitation in a downstream location as inoculating sludge (16.3).
17. (Currently Amended) The process in accordance with claim 1, wherein the processing of the process water (4.3) contains a flotation separation (14) for discharging solids.
18. (Currently Amended) The process in accordance with claim 1, wherein the processing of the process water (14.1.10) contains a sand washing stage (14.2) upstream from the biological process water processing and/or a sifting stage (14.3) for separating out floating and fiber substances.
19. (Currently Amended) The process in accordance with claim 1, wherein a sand sedimentation and precipitation plant (25) for the sedimentation of micro-fine sand and for the precipitation of phosphates, inert substances, etc. is arranged downstream from the sand washing (14).

20. (Currently Amended) A hybrid reactor, in particular for performing the process in accordance with claim 1, comprising a solid bed (9.2), sludge discharge means (9.8), and means (9.11) for destroying a surface scum, characterized in that the hybrid reactor (9) includes means for pressing in gas (9.15) so as to periodically subject a forming bed of sludge (9.2.1) and the solid bed (9.2) to shear forces.

21. (Currently Amended) The hybrid reactor in accordance with claim 20, wherein a desulfurization chamber (9.12) and injection means (9.13) for injecting air/oxygen for a desulfurization of the forming biogas are provided.